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Secondary School Wood Technology Graduates: What have Industrialists to Say? : A Case Study of Furniture Manufacturing Industries in Southerton Heavy Industrial Area in Harare

Henry Matienga
Department of Technical Education, University of Zimbabwe

Abstract
This article describes the experiences of the researcher in a research conducted at three (3) Furniture Manufacturing companies in Harare. The research questions were:

- *What skills do industrialists expect from secondary school graduates?*
- *What can be done to make sure that the graduates receive the right skills if they are not receiving them?*
- *How can schools and industry work together in the implementation of vocational curricula?*

A qualitative research methodology of an ethnographic case study paradigm was employed in this study. In depth interviews were conducted with the Human Resources Managers of the three (3) Furniture Manufacturing companies. Participant observations and document analysis were also employed. The main findings of this study were that employers/industrialists are not pleased with the quality of skills possessed by school leavers. They feel that the vocational curricula are not keeping pace with technological changes in industry. They also suggested that they should be involved in curriculum planning so that they can determine the curriculum content as well as how they can assist schools with materials and finance for vocational implementation.

It is therefore recommended that industry and curriculum planners work together for the betterment of vocational curriculum implementation.

Background and Purpose of the Study
This aim of vocationalisation of secondary school is to equip students with skills which industry requires, (Lauglo and Lillis 1988, http://portal.acm.citation). The belief is that if the graduates possess the skills required by industry then they stand better chances than those without the skills to secure employment. This seems not to be the case as most students who go through the vocational curricula still stand no advantage of securing employment over those without vocational credentials. The thrust of this study was therefore, to find out what the employers think of these graduates and what can be done to provide the required

skills. The main problem however, has been to evolve a type of vocational education that best suites our particular industrial needs. This is especially true with regards to an education which does not equip its recipients with skills which are likely to make them employable.

Lillis and Hogan (1993) argue that the vocationalisation of secondary school education is mainly a political response to poor articulation of schooling with the labour market. Vocationalisation is meant to ease school leavers into jobs or self-employment. An important question then is to find out how realistic this intention is (Lauglo and Lillis, 1988). They also stress that vocationalisation polices are a quest for better articulation between the content of school and subsequent application of the acquired skills, attitudes and knowledge in the world of work. There was therefore, need to find out if our own education system is answering to this quest.

Ukeje (1996) affirms that for today's technological industry, employers should employ people with the necessary qualifications and skills to man the machinery for mass production. It follows that schools should form the basis for the attainment of the needed qualifications. Lauglo and Lillis (1988) stress the need to teach job-specific skills through a human capital approach to education. Since technology is dynamic the argument is that technological development and economic growth require a labour force with education that will make the recipients better able to cope with changing technology and types of work, (http://wwwdae.inscu.edu 01-04-10 13:02).

On the contrary, Noah and Eekstein in Lauglo and Lillis (1988) state that employers do not wish to see schools place greater emphasis on the specific skills associated with particular occupations. One reason they give is that employers doubt if schools can teach specific skills effectively. Psacharopaulos (1985) shows that in Columbia and Tanzania there are no labour advantage of graduates from vocational courses, neither in terms of success in finding employment nor pay levels when employed. Norman (1985) also carried out a study in Kenya to find out if graduates from vocational courses stood any advantage in terms of employment over those without vocational education credentials. He established that these were no more successful in finding employment than those without vocational education. A question that needs to be asked is what skills then do employers expect from the graduates if vocationalisation of the school curriculum does not equip them with the relevant ones?

Mandebvu (1995) observes that Design and Realisation which is embedded in technical education creates duality of education and vocational training. He says for this to succeed it needs concerted effort from teachers, parents and most importantly employers.

Most studies carried out so far have directed their energy towards the role of technical/vocational education towards economic development. Chinyamunzore (1999) discussed the role of technical/vocational education in relation to human resource development. More needs to be done in the assessment of what industrialists expect from school graduates to make them more employable.

Research Questions

Given the problems outlined above the main research questions were:

- What skills do industrialists/employers into furniture manufacturing expect from secondary school graduates?
- What can be done to make sure that the graduates receive the right skills?
- How can industry and schools work together to improve technical/vocational curriculum?

METHODOLOGY

Research Design

A case study was used for this study. A case study was chosen because it allowed an in-depth collection and interpretation of data (Bogdan and Biklen, 1982, Lincoln and Guba, 1985, Robinson 1983). Moore (1983) also says a case study allows one aspect of a problem to be studied within a limited period of time. Bell (1993) says a case study allows an in-depth examination of a specific area from which a general trend can be declared. Since the thrust of this study was on identifying perceptions of the employers a naturalist approach was chosen because purely quantitative approach would have resulted in reduction of human feelings to a statistical aggregate, which is not real (Bogdan and Biklen, 1992). Qualitative approach was also chosen because it is holistic in the sense that it attempts to provide a contextual understanding of the complex interrelationships of causes and consequences that affect human behaviour (Goetz and LeCompte, 1984). Naturalist approach tries to understand concepts from the participants frame of reference, (Bogdan and Biklen, 1982).

The other advantage of case study is that it provided an opportunity for the research to develop insights into basic aspects of human behaviour (Crossby and Vulliamy, 1984). The intensive probing of this technique led to the discovery of

previously unexpected relationships. A case study was also ideal for production of hypothesis which can then be tested through more rigorous investigations.

Data Collection

Bogdan and Biklen (1982) stress that the research design and type of data required determines the data collection tools. They concur with Bell (1993) that for qualitative research, investigators may enter the research field with some idea about what they will do, but a detailed set of procedures is not formed prior to data collection. In addition, they stress that qualitative researchers avoid going into a study with hypothesis to test or specific questions to ask, believing that the questions should be the products of data collection rather than assumed apriori. In this study, the same technique was applied. The researcher went into the research field with a rough idea of what he intended to do and as he interacted with the participants, research questions began to emerge.

Data was collected using unstructured interviews and document analysis. Unstructured interviews were the main data collection technique because it provided information on feelings which were not observable. (Bogdan and Biklen, 1982, Nyawaranda, 1988).

Using different data collection techniques was a form of triangulation which according to Lincoln and Guba (1985) adds to trustworthiness of data. They say to some extent, this addresses the question of validity and reliability demanded of scientific research.

Data Interpretation

Data interpretation for qualitative researches is the process of systematically searching and arranging the interview transcripts, field notes and other materials that the researcher accumulates (Bogdan and Biklen, 1982). They say this is done to increase the researcher's own understanding of the data. For this study, data analysis started with what Lincoln and Guba (1985) call making sense of data. This is the process where data were broken down and explored in terms of both general and particular units of meaning displayed in them. Analysis also involved developing coding categories as a way of organising data (Bogdan and Biklen, 1982). This was a means of sorting out the descriptive data that were collected so that the material bearing on a given topic could be separated from the other data. Situation codes and process codes were employed. Situations codes are codes that aim to place units of data that tell how the participants view themselves in relation to the topic under study (Bogdan and Biklen, 1982). Process codes refer to coding words and phrases

that facilitate categorising sequence of events, changes over time and passage from one type or kind of status to another.

RESULTS

Perception I : 'O' Level school leavers have good material science knowledge

The above perception rose from what the managers revealed in interviews as well as document analysis.

M1 (HRM for Company I)

'O' level school graduates can do quite good designing taking into consideration the qualities and properties of materials."

M3 "There are incidences when we need to make use of theory knowledge possessed by 'O' level graduates, for example their knowledge of materials."

M2 : "The knowledge of fixing devices, that 'O' level graduates have should be applauded. They also have sample knowledge of timber as a material, types of timber and their properties and the like which is quite handy."

Documents/minutes of interviews analysed showed that 'O' level graduates have always done fairly well on the section where they were asked to explain properties of certain timbers.

Perception II: 'O' Level school leavers are falling short in most areas.

"'O' level school leavers have too basic knowledge of materials" **M1**.

"O' level school leavers are more of theorists but we need more practical orientation.

M3

"The colonial F2 systems produced graduates far better than current 'O' level ones **M1**.

"I often tell new 'O' level school graduate recruits to work extra hard to catch up with what we want or risk being fired" **M2**.

"The current education system should not be like the colonial F2 system which produced trainees who could not perform beyond what they were taught" **M2**.

Document on evaluation of 'O' level school leaver recruits' performance exposed that they need to improve their drawing skills and that they are illiterate in terms of Computer Aided Design (CAD). The same documents also showed that in this modern age of technology, theory alone does not suffice to lay the foundation for the training of the worker that industry needs.

Perception III : Curriculum needs revamp

"All 'O' level school leavers we employ have little knowledge of materials and

nothing of other materials apart from wood" **M2**.

"The knowledge of materials that 'O' level school leavers possess is quite inadequate in today's production". **M1**.

"Today's production now includes other materials like rubber, glass, plastic and ceramics and many others. For graduates to be handy in this new requirement, they must have studied these materials". **M1**.

"The subject should no longer be called Woodwork because it becomes suggestive of teaching of the science of wood only at the expense of other materials." **M2**.

"Computer Aided Design (CAD) should now be a component of the 'O' level syllabus as most schools teaching Wood and Metal Technology now have computers." **M1**.

"I have been to Canada where I noted that their curriculum is broken into vocational and academic lines. Students choose to either take the vocational or academic line." **M2**.

"Streamlining creates specialisation too early. Students are not developed broadly." **M1**.

Progress reports compiled by Managing Director of Company II indicate that where other materials apart from wood and metal were to be used they have had to sub-contract the jobs to other companies as they had no machinists or technicians with the requisite knowledge of these materials.

M1: "Streamlining the curriculum creates graduates with a poor base of general education. I propose beefing up the curriculum with more areas for coverage."

M1 : "The starting point of co-operation should be the planning stage. We, as industry are willing to offer help in the implementation of vocational curricula. We cannot offer assistance in a curriculum whose planning we were not involved in."

M1 : "Economic conditions permitting, we are willing to work with Government in improving the curriculum. We may even support selected schools materially for vocational curricula implementation."

Interpretation of Perception I

It has emerged from the interviews that the 'O' level curriculum seems to fulfill one of its major objectives which is to prepare the graduates for further training or specialisation. If the 'O' level school leavers have material science knowledge that industrialists could realise then that's a positive contribution of the curriculum. One of the managers acknowledged that the knowledge the 'O' level school leavers have is good enough to prepare them for on-the-job training.

The above is supported by Masri (1994) who believes that the school should lay the basis of good technical education in preparation for specialisation in further education and on-the-job training or vocational education. Lauglo and Lillis (1988) concur with the above and go on to stress that rapid technological development and economic growth require a labour force with general rather than specific specialised knowledge so that they are better able to cope with changing technologies. They go further on to argue that in this modern world of changing technology, it is difficult to predict the exact vocational skills a person will require in future. It is, therefore, necessary to stress on general vocational education at school level and specialised training later. This is said to induce adaptability on the part of the school leavers for future training. Oxenham in http://www.tech.com.gen.index.html. 06-06-10 9.20) similarly stresses that specialised vocational training should be left to the employers themselves and that schools should concentrate on imparting what is their distinct role, general education.

This researcher, believes that it is true that the school should concentrate on general knowledge and leave specific training for institutions that are best suited for that. The general knowledge, however, should lay the basis for the vocational training. It should not just be general education with little relevance to subsequent training. Technical education with no link to what students will meet in future life may be seen as irrelevant.

Interpretation of Perception IV

The industrialists' voiced concern over what they premised as too basic machines knowledge that 'O' level school leavers show. The fact that they have basic knowledge means the school leavers are ready for on-the-job or specialised training. The industrialists seem to be vending their anger over harsh economic conditions on innocent 'O' level school leavers. One of the managers even threatens to fire the 'O' level recruits should they fail to quickly catch up. A fact that reveals that they are expecting the recruits to do their own training and practice of some sort. The managers are trying to shift the training

of the manpower they require to the public purse because economic conditions are not permitting them to do their own on-the-job training.

Masri (1994) asserts that the above is an area that is contested in many countries. The major concern is whether vocational education should be the responsibility of the education system or the enterprise. Lauglo and Lillis (1988) stress that economic conditions are a crucial factor in shaping the nature and extent of business/industry participation in education and training. They say in tough economic conditions industry tends to curtail training because they may not afford to offer extra training. Critics point to the fact that it is a point of affordability. The quality of the products of vocational education is a question of affordability. The fiscal positions of schools do not permit them to heavily invest in industrial training. To this effect such expensive training can better be left to industry. (http://www.vtpp.vf.educa.pptc: 06.04.

Mention was also made to include Computer Aided Design (CAD) and appropriate technology in the 'O' level syllabus. This is a noble idea as it is in line with technological developments. This falls back to the assertions by Venn (1964) that planners of vocational programmes need to keep pace with current trends. Lauglo and Lillis (1988) concur and further point out that in terms of changing forms of required knowledge a major criticism of diversification programmes is that they largely reflect adherence to traditional and often archaic content and structure with little relevance to new technological and industrial developments. Goebel in Lauglo and Lillis (1988) states that constant researches in Britain, France and Germany have made it possible for the content of vocational programmes to be in constant pace with technological changes.

Contradiction emerged in comparison of current 'O' level school leavers to colonial F2 graduates. One of the managers feels that F2 graduates were better while another is of the opinion that F2 graduates acted like robots which cannot go beyond where they are prescribed. This nullifies the desire by these managers for the education system to produce graduates who are adaptable to changes in industry because F2 graduates were trained to perform specific jobs in an endeavour to keep them attached to specific industries. Adaptability was out of question for F2 graduates. Zvobgo (1996) believes that the context with which training in F2 schools was done was such that it upheld the principle of separate education by the colonial government. These schools were disadvantaged in terms of both resources and manpower hence its abolishment due to public antipathy at independence.

Interpretation of Perception IV

The industrialists indicated a number of components they wish to see included in the 'O' level vocational curriculum. These components have been discussed in the section on areas which 'O' level graduates are falling short. These areas need to be improved in line with new technological trends. It is believed that this will enhance adaptability on the part of the graduates as they move from one stage to another.

Miller (1997) is of the view that education has roles to play to its beneficiaries as they move from one career ladder to another. The first is that it should serve on instructional function which enables the person to utilize his/her past experience whenever this will be of value in the new career. He also stresses that education should serve a validating function by certifying to prospective employers that the graduate has the necessary skills/knowledge and attitudes to succeed in the new career.

Maurice in Harris (1978) advises that change is much an aspect of society which it exists to serve. He emphasizes that education should be adaptable. Failure to adapt results in students being given knowledge which they may not use in changing circumstances.

Venn (1964), Lauglo and Lillis (1988) all concur on the need for planners to ensure that vocational curriculum is keeping pace with technological changes. Brandon (1971) also stresses the need for educational programme planners to put in place research mechanisms to constantly supply them with information on the change required. Harris (1978) argues that educational innovation is not a temporary process because the rate of social, economic and technological change outside the educational system is too persistent. The educationist while continuing to perform some relatively unchanging tasks, will need to adjust many of their functions in response to the broader changes.

One of the managers advocated for the introduction of CAD which he said should be a component of the 'O' level syllabus as most schools teaching Wood and Metal technology now have computers. While that is a noble idea, the major concern here is whether the schools can afford to have these packages/programmes running. If they can have the programmes installed, do they have the manpower to drill these skills?

Miller (1987) acknowledges the fact that vocational teachers must possess pedagogical competencies for the success of these programmes. Newcombe in

Miller (1987) also stresses the need for vocational teachers to be technically and pedagogically competent. He points out that it is their competence in which the success of vocational programmes hinge. He goes further to conclude that vocational programmes may be initiated but without competent teachers, the resources harnessed for such programmes may be put to waste. Allen in http://www.vtc.prcs.gd.gov.vu: 06-04-10 10.15 emphasize that to be able to met standards and innovations outlined by industry, vocational teachers need to remain current with developments in the occupational areas being taught. He concludes by urging teachers to avoid getting rusty and knowledge of occupational area from becoming outdated. Venn and Skutack (2005) mention that we cannot expect to simply improve the content and process of vocational education without preparing the teachers first for the intended improvement.
A suggestion to streamline the 'O' level curriculum into vocational and academic lines so that students can make a choice to either take the vocational or academic line was made by the managers. Some of the advantages cited are the increase in time which in turn allows wider coverage and that it also permits specialisation at a lower level. It is true that vocational curricula need more time but there are a myriad of problems which may militate against streamlining the curriculum at an early stage. One of the problems cited by one of the managers is that it reduces the broad base of education that students should get at 'O' level. Graduates get a narrow base of general education thereby inhibiting adaptability.

Early specialisation may result in duplication of roles between schools and vocational training/polytechnic colleges. Furthermore, schools may not have the equipment for specialised training resulting in poor quality graduates. Experience has shown that even when more time is accorded to technical/vocational subjects, the aspects of planning, constant supply of training materials and finance will still militate against their effective and efficient implementation.

Before any streamlining is done, if any is to be done, the public may need to be educated on the essence of this idea lest it be seen as going back to the colonial F2 system. It should, however, be noted that regardless of how negatively the general populace might view the aspect of vocationalisation of the school curriculum, it is the school's responsibility to address the fact the pupils may need to use tools and practical techniques in their private life. The emphasis by most developed countries on useful learning and acquisition of practical skills played the major role towards their industrial development (Lauglo, 1985). Our education system should take cognisant of the fact that learning should be

directly relevant for the active interests and concerns which pupils have or will face.

When secondary education assumes a mass education character, a pragmatist view of curriculum is strengthened (Lauglo, 1985). He further points out that vocationalisation is also a reflection of the need to equip pupils with employable skills. Streamlining the 'O' level curriculum will enhance the skill content at the expense of other less measurable elements such as adaptability, criticality and mobility which can better be developed through a liberal approach to vocational education. To educationists the economic value of education resides principally in certain social communication skills imparted to students and only secondarily in the formation of those technically required productive skills advocated for by manpower forecasters (Masri, 1994).

Miller (1985) concurs with the above and goes on to stress that education is economically valuable not because of what students know but because of how they approach the problem of knowing. The main shortcoming in the economists' approach to education is in measuring only the private returns of education but not the social contribution which the education makes. It is said that the responsibility of the education system in the field of vocational education is to prepare individuals who are intelligent users of the means of production rather than individuals who are mere means of production (Masri, 1994). Early specialisation will thus create individuals who are mere means of production.

In contrast with the view of educationists, economists in developing countries would tend to oppose a later start of vocational preparation and long periods of preparation for the basic occupational levels, not only because of the stage of economic development in many such countries but because there is still need of a high percentage of limited skills and educational background especially in some sectors of the economy which cannot attract labour with high skills (Masri, 1994).

Interpretation of Perception V

The industrialists lobbied for strong co-operation between them and educationists. This, they said, will keep educators up-dated with changes in occupational requirements and developments. It is important that industry, business and educators share their experiences and knowledge and give each other advice that can help vocational programmes stay current.

Advice seeking by educators from industry and business is an attempt to capitalize on the expertise that makes up the industry and business community. Competent people in business and industry possess a collective understanding of what ought to be in the curriculum of a vocational education programme better than educators who are responsible for planning or teaching the content of vocational education.

Evans (1971) favours industry and business involvement in vocational education. He suggests that their involvement in education is more than providing a right base for ownership. Through involvement and giving advice business and industry begin to develop an attitude that is, "our programme" rather than "their programme". Where both employers and employees are involved from the inception they tend to be satisfied with the results. It is through well articulated and equally well coordinated efforts that vocational education is most likely to meet the desired needs.

Masri (1994) suggests the development of an integrated approach to vocational programmes. In this he proposes the development of a general framework that would encompass both the school and the enterprise. This approach would ensure shared costs for the implementation of the vocational curricula. The integrated approach has several other advantages, one of which is the human development of the individual by the school and the professional development by the enterprise. This is because the enterprise lacks the competency to guide human development while the school also lacks the guidance in professional development (Masri, 1994).

In the light of the advocacy by Masri (1994) that an effective relationship between education and economic development should reflect various socio-economic conditions, it is, therefore, imperative that the relationship be made flexible. It should vary as change occurs, for example, the change in manpower demands should employ change in supply of the manpower. Change in state of technology should imply change in curriculum content. This is only possible should there be constant interaction between educationists and economists.

Lauglo and Lillis (1988) point out that in developed countries the distance between the world of work and schools has diminished sharply. This has led to coordinated efforts in curriculum change. They say in England and Germany, business and industry advocated for a curriculum that adopts much more readily to the changing needs of the economy. With the above changes observed business/industry organisations urged their members to sponsor partnership

with individual schools and groups of schools, to make available to teachers, equipment and information about the world of work (http://www.vvtt.ext.vt.education: 06.04.10 10.22).

If business/industry involvement in education is to be successful and even be expanded, careful attention has to be given to establishing the conditions and appropriate institutional arrangement for collaboration between them and the schools.

It may be naïve to assume that only industrialists have the knowledge and zeal to influence vocational change in Zimbabwe. Operationalisation of vocational curricula diversification is also influenced by several institutional factors. Institutional ethos underlying the establishment of schools, their present development goals, historical, traditional and cherished values all affect implementation of vocational curricula. History and traditions indicate that vocational type subjects have had an uneasy and precarious existence in the curriculum. Obviously, curriculum implementation stands better chance of success where the recipients have a high degree of interests. Consideration needs to be given to the way diversified subjects are organised and structured, as well as the staff strength and resources available to teach these subjects. These factors are known to determine the extent to which educational curricula can be successfully operationalised.

The way forward could be to learn from industrialised nations and take only that which is applicable to our own quest.

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